A CONTRIBUTION

TO THE STUDY OF THE BLOOD IN CANCER

WITH SPECIAL REFERENCE TO THE

WASSERMANN REACTION.

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I N T R O D U C T I O N.

Those who have faced the problem which cancer or malignant growth presents must consider which line of research may best lead them to the possibility of its solution; some of the varied directions in which this investigation has been pursued may be briefly outlined here.

Russell described "Cancer Bodies" consisting of small hyaline spherical bodies of various sizes, staining deeply with fuchsin, lying singly or in groups, in stroma and in cell which he supposed to be parasites and the cause of tumour growth. Ruffer and Plimmor described bodies spherical in shape surrounded by a capsule and possessing a nucleus. These bodies were plentiful at the growing edge of carcinomata and were also deemed parasatic in nature.

Yeast like forms were isolated by San Felice and others, some strains of which on inoculation did indeed induce growth but of the nature of a granuloma and not of a carcinoma, Doyen has described a Micrococcus Neoformans; various bacilli have been isolated and possibly the action of ultra microscopic organisms may yet be regarded with suspicion as being responsible for the origin of malignant disease.

Of recent years much work has been done as regards the chemistry and biochemistry of the tissue fluids which surround malignant growths and an increasing group of pathologists believe that very valuable results concerning the aetiology of cancer may be derived from their investigation. Naturally the tissue fluid of prime importance is the blood.

The relation between chronic superficial glossitis, a condition often regarded as syphilitic, and epithelioma of the tongue has been long recognised, and it would seem reasonable to anticipate that fibrosis in other parts of the body, of syphilitic origin, might by a process of chronic irritation give rise to malignant disease.

With the view of testing this hypothesis the Wassermann Reaction was performed on the sera obtained from a series of cases of malignant disease at the Christie (Cancer) Hospital, Manchester. The examination of the serum was supplemented by a clinical examination of the patient and an enquiry into the history with the special object of obtaining evidence of a syphilitic infection.

Other Observers have carried out investigations along these lines; Fox (1913) of New York in testing the assertion that many other diseases viz: Leprosy, Scarlet Fever, Trypanosomiasis, Diabetes Mellitus, Malaria, Idiopathetic Epilepsy, Leukemia, Puerperal Eclampsia gave a positive Wassermann Reaction carried out Tests on the sera of a large number of patients suffering from malignant disease and obtained only 5 positive reactions out of 215 cases of sera from cancerous patients.

In report of his findings he gives the results obtained by Noguchi (1913), Caen (1913), Newmark (1913), Oppenheim and Marbury (1913), Foster (1913), Boas (1913) and Orleman-Robinson (1913), these may be briefly outlined here:

Noguchi obtained one positive result in 39 sera of cancerous patients examined.

Caan reports that he applied Wassermann Tests to 85 cases of carcinoma and obtained 41 positive results. Of those the test was positive in 6 out of 7 cases of carcinoma of the lip, in 67 per cent of epithelioma of the lip and chancroids, in 9 per cent of carcinoma of the breast and in 17 per cent of his gastro-intestinal cases.

Leo Newmark reports two unusually interesting cases of tumour both of whom gave a positive Wassermann Reaction - the first case was that of a woman suffering from word deafness and paraplegia. As she gave a positive Wassermann Reaction she was treated with Mercury and Iodides. Her progress was satisfactory for a few weeks, then the original trouble returned and a nodule was found in the breast, the patient died and at the autopsy the tumour in the breast was found to be a Sarcoma and in the brain was found a gliosarcoma. No trace of Syphilitic affection was found in the brain, although the cerebro spinal fluid gave a positive Wassermann Reaction.

In the second case an intradural psammoma, both blood and Cerebro Spinal fluid gave a positive Wassermann Reaction which after operation became Negative.

Oppenheim and Marbury each report a case of Fibroma of the Pons Crebelli in patients whose blood showed non-Haemolysis in the Wassermann Test.

Foster in the Lancet reports one positive Wassermann Reaction in 36 cases of cancer with no history of Syphilis.

Boas in the State Serum Institute at Copenhagen has published the result of 1064 investigations with non-syphilitic sera. These included cases of Tuberculosis, lobar pneumonia, Malaria, Leprosy, Carcinoma and other diseases in which the occurrence of the Wassermann Reaction has been alleged from time to time. In the entire series only one result was positive and that occurred in a case of scarlet fever.

Orleman-Robinson working with Noguchi's Modification got 30 negative Wassermann Reaction in 30 cases of Epithelioma.

Ryall (1913) states that as a result of investigation of cases of tongue cancer 80 per cent have given a previous history of Syphilis and

concludes that in the greater number of these cases a positive reaction would be obtained.

Leitch (1913) in endeavouring to establish the thesis that Syphilis is an important factor in the production of cancer of the tongue quotes 5 out of 7 cases of cancer of the tongue as giving a positive Wassermann Reaction. He further states that the main point with regard to the employment of lingual lesions is that it is quite useless as a means of descriminating between cases of cancer and syphilis but not with regard to cancer in other regions.

Mac Cormac, Colwell and Morson (1913) investigating a possible relationship between malignant disease and syphilis tested the Wassermann Reaction of 60 cases of cancer and obtained only 4 positive reactions, of these carcinoma of the Mucous Membrane of the mouth formed 20 cases with one markedly positive reaction while another was indefinite.

The marked difference in the results arrived at by the different observers is very striking:- thus Fox(1913) out of 215 sera examined obtained only 5 positive results, while Caan had 41 positive results out of 85 cases examined.

Leitch records 5 out of 7 cases of Epithelioma of the tongue as giving positive results, while Mac Cormac, Colwell and Morson only obtained one definitely positive result out of 20 cases of cancer of the Mucous Membrane of the mouth and Orleman-Robinson working with Noguchi's modification got 30 negative Wassermann Reactions in 30 cases of Epithelioma, Newmark reports a positive reaction in two patients suffering from tumour in whom no history of Syphilis was obtained - Foster on the other hand maintains that cases of cancer with no history of Syphilis do not give a positive reaction. Faced with these conflicting results the thought occurs whether:

Method used
Antigen used
Insufficient Experience
Undue bias
Wrong technique

may not have had considerable influence on the findings of the different observers - further the exact determination of a weak or doubtful non-haemolysis is largely a matter of individual bias and experience. No absolute and definite criterion exists as to exactly when a doubtful reaction is to be classed as a positive e,g. as to how many units of complement it

may be permitted to add for the purpose of the test to the 1 unit of the patient's Serum.

The findings of these observers show that the evidence for and against a positive Wasserman reaction occurring in cancerous sera is pretty evenly balanced, but rather inclines towards its non-occurrence and this agrees in the main with the results obtained in the course of my investigations.

The questions to which I have endeavoured to obtain answers were the following:-

(1) Will a series of cases of malignant disease show an abnormally high percentage of positive Wassermann Results?

(2) Is there any association between any particular form or situation of the malignant growth and the presence of a positive Wassermann Reaction?

At the outset there appeared to be two difficulties to be anticipated.

In the first place it has been alleged that persons suffering from Malignant Disease especially in the late stages may give a positive reaction.

I am inclined to think that there is not sufficient evidence for this statement.

On the other hand it was not to be expected that the percentage of positive results would be very high amongst cancerous patients.

Malignant Disease is notorously more common in old age while Syphilis is usually contracted in early adult life, since a positive result is obtained less commonly in the late tertiary period and especially when the disease becomes latent, it was hardly to be expected that a very high percentage of positive results would be obtained.

As the result of my investigations which included tests performed on patients suffering from various forms of malignant Disease, and from malignant disease in many different regions e.g. Tongue, lips, oesophagus, pharynx, larynx, mouth, glands, liver, omentum, ovary uterus, Mamma, parotid, I do not think it is possible to assert that malignant disease of any particular region or in any particular form gives rise to a positive Wassermann Reaction. As may be confirmed by reference to Appendix A. the positive results obtained were not confined to any one form of malignant Disease nor to its occurrence in any particular region.

Before proceeding to tabulate the finding in my investigations of 130 sera of patients suffering from malignant disease at the Christie (Cancer) Hospital, Manchester I shall give a brief summary of the evolution of the Wassermann reaction and describe fully the method adopted.

EVOLUTION OF THE WASSERMANN REACTION.

HISTORICAL.

In 1894 Pfeiffer (1896) showed that when cholera vibrios are inoculated into the peritoneal cavity of a guinea pig which had previously been inoculated against such, the organisms undergo lysis or solution and disappear. Metchnikoff (1895) showed the same action occurred out of the body in vitro if the organisms are mixed with some immune serum and a small quantity of fresh peritoneal fluid added.

Bordet (1895) next discovered that freshly with-drawn serum did not require the addition of fresh peritoneal fluid. If, however, the immune serum after withdrawal has been allowed to stand for some days or has been heated to 55°C. for a short time, bacteriolysis does not occur until fresh serum from almost any source is added.

For bacteriolysis therefore two substances are required:

(1) The immune body which is not destroyed by heat.

(2) Fresh serum or peritoneal fluid containing in this condition a substance called complement.

Bordet next discovered that an animal can manufacture immune bodies in its tissues against a large variety of foreign protea substances, bacteria, red blood cells, spermatozoa, and many other tissue cells. To such foreign substances capable of bringing response by the production of immune bodies, the term antigen can be applied. Such immune bodies are specific. Thus haemolysin for sheeps erythrocytes will not destroy ox's erythrocytes and vice versa.

Bordet and Gengon applied these phenomena in what is known as the Bordet-Gengon Reaction. A definite quantity of the non specific complement (obtained by using fresh normal serum) was placed in a test tube and incubated at 37°C for a certain time with a definite volume of the patient's serum (heated at 55°C for 30 minutes,) and a definite volume of a saline suspension of the foreign protein substance present in the patient's tissues.

If Typhoid is suspected an emulsion of typhoid bacilli would be used as an antigen.

If the patient is infected with the organism in question his serum containing the specific immune body will in the presence of the corresponding Antigen absorb a considerable amount if not all of the Complement used.

An indication of this is obtained by again adding sheeps erythrocytes (washed free from complement by repeated centrifuging with normal saline,) and the corresponding immune bodies e.g. Haemolytic serum to sheeps erythrocytes. If the complement has been absorbed no haemolysis will occur and this indicates infection past or present by the specific antigen used. If on the other hand no specific immune bodies are present in the patients' serum, the complement will be left free to unite with the sheep's cells and their corresponding immune bodies, and haemolysis will occur.

The next great step occurred in 1905 when Schaudinn (1905) discovered the spirochaeta pallida to be the organism universally present in primary syphilitic sores.

Wassermann, Neisser, and Bruch (1906) immediately seized upon this as a means of

applying the Bordet-Gengou reaction to the serum diagonsis of syphilis. Since at the time cultures were not available, a saline extract of foetal syphilitic liver rich in spirochaetae was used. It was later shown that an alcholic extract of normal liver, or, in fact almost any other tissue rich in lipoids might be used. This was the first indication that the Wassermann Reaction departed in reality from the theory which lead to its inspection. Other observers vigorously attacked the problem, and the next step was made when Browning, Cruickshank and Mackenzie (1910) discovered that an emulsion of Lecithin and Cholestrin absorbed more complement in the presence of a syphilitic serum than an emulsion of Lecithin alone - even accounting for the amounts absorbed by these two emulsions separately, and with normal sera. These observations as to its non-specific technique, together with reports of positive reactions in certain other diseases caused grave doubts to be cast upon the efficacy of the whole reaction. Had it not been for the actual practical working value of the reaction it would doubtless have been swept away, but in so many cases was it of value, and in some cases of vital import, that the reaction held ground and survived in its better modification.

METHOD.

Antigen.

A saline emulsion of alcoholic extract of foetal syphilitic liver was used. The alcoholic extract was made on the large scale and was purchased. Spirochaetae were demonstrated in large numbers histologically before any liver was adopted, and after being prepared was checked on at least 100 Syphilitic patients before being issued. The preparation was made in a reputable laboratory.

A 1 in 10 emulsion in normal saline was used, the alcoholic extract being gently delivered from a pipette on the top of a measured quantity of saline in a narrow tube. By careful rotation an emulsion of maximum opalescence was obtained if possible. The Antigen contained no added cholesterin. The dose used in each Antigen tube was 0.1 c.c of the Saline emulsion.

Patient's Serum.

The patient was bled usually from a finger into a small tube of 1 c.c capacity. The serum was pipetted off, usually within 48 hours and was hermetically sealed within a small capillary pipette, blown into a bulb in the middle. The sera were generally tested within one week of collecting the blood.

Rarely more than ten days elapsed.

Immediately before testing, each serum was placed in an air-oven, heated by a water jacket at 55 C. to 57 C. for 30 minutes.

A 1 in 10 dilution of this Serum in Normal Saline was made and for testing purposes 0.1 c.c and 0.2 C.C of this dilution were used.

Four tubes were used for each serum.

Tube 1 contained 0.1 c.c diluted serum (saline control)

Tube 2 contained 0.1 c.c diluted serum (antigen Tube)

Tube 3 contained 0.2 c.c diluted serum (saline control)

Tube 4 contained 0.2 c.c diluted serum (antigen tube)

3. Complement.

Guinea pigs'Serum was used as the source of complement, obtained from one animal (occasionally two) about 20 hours before use. Occasionally serum up to 40 hours was used. The strength of complement was titrated before use, being incubated for 30 minutes, the racks being shaken after 15 and after 20 minutes from the commencement. The strength of complement used was 2.5 to 3 times the estimated titre of complement required to haemolyse 0.1 c.c.of sheeps washed erythrocytes.

4. Erythrocytes.

Sheeps'cells were used as an indicator. They were collected in a sterile bottle one or two days before the experiment, sterile broken glass or beads were shaken up with the blood to defibrinate it. Sodium citrate was not added. The cells were washed four or five times with normal saline, care being taken by means of a preliminary centrifuging to remove any minute clot which might interfere with the accuracy of the experiment. The final centrifuging lasted for several minutes, so as to get the cells "hard centrifuged" yet without damaging them. A 5% emulsion in normal saline of the resulting centrifuged cells was used, the volume being 0.1 c.c of this 5% suspension.

The method is not an ideal one but is the best available until some method is evolved whereby the cells can be standardised directly against some fixed agent, possessing a definite and stable chemical composition, which can also haemolyse in direct proportion to its mass. No preservative of any kind was added to the cells, which were obtained as fresh as possible.

5. Haemolytic Serum.

Dried haemolytic serum from a reliable laboratory was dissolved in saline and used. Excess (at least 4 haemolytic doses) of this serum was used and its action ascertained during the preliminary titration. The volume used was 0.1.c.c.

GENERAL METHODS.

The patients whose cases were investigated were entirely in-patients at the Christie Cancer Hospital and of the poorer and lower middle classes.

As I have held the appointment of Clinical Assistant and Registrar at the hospital for the last 2½ years I had exceptional opportunities for collecting specimens of blood from cancer patients, the histological findings of the Pathologist Dr. Powell White were available for confirmation of diagnosis.

The post-mortem records have extended over twelve years, and the results are briefly summarised in the accompanying appendix D.

The total number of patients examined = 130

The total number of women patients examined = 53

The total number of men patients examined = 77

Average age for Total cases = 52.4

Average age (on 77 cases) of men = 55.3

Average age (on 53 cases) of women = 51.2

Average duration of Disease = 2.3 years.

Histological examinations were performed in 56 cases and were confirmatory. The diagnosis could scarcely be said to be in doubt in any of the whole series. The average stay in hospital was 11.1 weeks during which time the patients were under close observation. Several of the patients were tested more than once. The reaction was taken in four patients with a syphilitic history after the so- called"provocative injection" of neosalvarsan first described by Gennerich and Millian and later by McDonagh (1912) in this country.

The essence of the method consists in the examination of the blood before an injection and

at varying intervals after an injection, the maximum reaction occurring from two to eight days afterwards. By the summation of the action of several foci of killed spirochaetae a greater reaction is obtained than if the organisms were left undisturbed. Such summation is achieved at one blow by an intravenous injection of neosalvarsan.

I have ascertained that this reaction was to be obtained in several syphilitic cases examined by a colleague and I had also ascertained in a few cases that the "Provocative reaction" did not obtain in non syphilitic cases after such injection of Neosalvarsan.

R E S U L T S.

Region.	Positive.	Doubtful.	Negative.	Total.
Lip.	1	0	1	2
Pharynx, Larynx, Oesophagus.	0	0	8	8
Mouth.	2	0	9	11
Tonsil.	0	1	4	5
Tongue.	2	0	16	18
Breast.	0	0	18	18
Stomach.	0	0	3	3
Omentum.	0	0	1	1
Uterus.	4	0	13	17
Ovary.	0	0	2	2
Rectal.	0	0	5	5
Parotid.	0	0	3	3
Glands. (no prim. found.)	1	1	6	8
External genitals.	1.	1	2	4
Prostate.	0	0	1	1
Skin.	2	1	17	20
Thyroid.	1	0	0	1
Femur.	0	0	1	1
Mediastinum.	0	0	1	1
Bladder.	0	0	1	1
	14	4	112	130

Glands.

Of the two positive cases, case 99 had an extremely faint reaction on one occasion and a doubtful one on the second. The other case (102) was strongly positive. In this case the disease was of short duration and led rapidly to death.

External Genitals.

The one positive case (106) was very strongly positive. This case is referred to in discussing the Tongue cases.

Skin.

Of the two positive cases one (111) had a weak reaction and one (126) had a very strongly positive reaction, this was a case of Melanotic Carcinoma.

Thyroid.

One case (128) gave a weak reaction, less marked with 0.2 cc. diluted serum than with 0.1 cc.

Mouth.

One case (128) gave a weak reaction, another case (23) gave a strongly positive one, in his case there was a definite history of syphilis many years before. No histological examination was available in either case.

Uterus.

With regard to the cases in which a strongly positive reaction was obtained the following cases, in whom the strongly positive reaction gave place, as the cancerous condition progressed, to a decidedly negative one may throw some light upon the result. Mrs. Lawley (case 81) aet 27 admitted June 1915 with diagnoses of uterine cancer and a history highly suggestive of syphilis acquired after marriage, gave a strongly positive reaction. Discharged after a course of Radium treatment she was readmitted in August with cancer in a more advanced stage, blood when tested Sept.4th 1915 gave a decidedly negative reaction, the Luetin reaction being also negative.

Mrs. Ball aet 34 admitted Dec.1913 with a diagnosis of uterine cancer and a history suggestive of syphillis acquired after marriage gave a positive Wassermann reaction. Patient underwent an operation and histological examination confirmed the diagnosis, she was discharged well. Re-admitted Dec.1914 with recurrence the Wassermann reaction was decidedly negative when tested.

Tongue.

Of the two positive reactions one (case 33) was faint on one occasion and doubtful on second. The other case (42) gave a negative reaction first gradually increasing, during nine months, to a strongly positive one. There was a history of syphilis many years previously. Two possible explanations of this result present themselves, (1) there may have been such a great production of immune bodies in the blood to combat the very extensive and prolonged suppuration which took place in this particular case, as to influence the Wassermann reaction, or (2) the patient had become physically so reduced during many months as to favour a "lighting up" of the syphilitic infection as shown by the Wassermann reaction becoming positive. If the occurrence of the positive finding is to be ascribed to the physical exhaustion of the patient, it does not agree with the result obtained in the cases of Mrs. Lawley and Mrs. Ball, mentioned under Uterine findings, in both of whom syphilitic infection was of much more recent date, and in both of whom the positive reaction gave place to a negative one as the cancerous condition progressed.

Case 106 may be quoted as showing that the positive reaction has not varied in strength although the patient, an old soldier, has been under observation for more than 18 months, and has had his Wassermann reaction tested several times. There is no history of syphilis. For the last 18 months there has been very extensive suppuration taking place involving a large area of the groin and Perineum.

The Luetin Reaction was performed on some few cases (see appendix B) of cancer patients.

This reaction consists of an intradermic inoculation of an emulsion of the killed cultures of the Treponema Pallidum - this reaction is similar to the Tuberculin reaction and is useful as a test in tetiary and latent syphilis. The results obtained so far have all been negative, a control case of congenital syphilis giving a positive reaction.

Discussion of Results.

Briefly summed up, my findings show, out of 130 cases examined, 14 positive, 4 doubtful, and 112 negative results.

These results are, on the whole, inconclusive, but certainly lend no support to the view that syphilis is a frequent cause of

malignant disease. They do however suggest two other points of view.

(1) The effect on the Wassermann reaction of the occurrence of malignant disease.

With regard to this point the following observations may be deduced from the results obtained:-

(a) In few cases of cancer is a strongly positive Wassermann Reaction obtained.

(b) In some cases of cancer in whom a syphilitic history was obtained the reaction was frequently negative, even after a"provocative injection" of Neosalvarsan.

(c) In some cases of cancer, where a positive reaction was originally found, a negative reaction resulted on a second examination of the blood at a later date.

(4) In the majority of cases the Wasserman Reaction was negative.

It has been alleged against the Wassermann Reaction that a positive result is often obtained in the late stages of malignant disease, against this view I might instance the two cases of uterine cancer previously quoted (cases 81, 75) in both of whom the positive reaction gave place as the malignant disease progressed to a negative reaction.

Newmark, as quoted by Fox, also found a positive Wassermann reaction in a case of Psammoma giving place later to a negative reaction.

In my series of cases it was found that in those cases giving strongly positive reactions (except case 42, 106) the disease progressed very rapidly, and the history of its duration as obtained from the patient was a short one.

The findings in the cases of Epithelioma of the tongue were particularly interesting in view of the belief of the peculiarly predisposing action of Syphilis as a factor in the actiology of cancer in this region, only 2 out of 18 cases giving a positive result.

My series of 18 cases of Carcinoma of the Breast all gave negative reactions, while Caan, as quoted by Fox (1913) obtained 9 per cent of positive reactions in Breast cases.

(2) The effect of intercurrent disease (other than malignant disease) on the Wassermann reaction.

In the whole course of this investigation, an increasingly positive reaction has never been obtained, except in cases accompanied by extensive and prolonged suppuration. In this connection, I would suggest that extensive suppuration might stimulate such a formation of immune bodies in the blood as to influence the production of a positive reaction and cases 33 and 106 would seem to bear out this view.

Viewed from this standpoint, the effect of a large dose of vaccine might be to convert a weakly positive Wassermann reaction into a strongly positive one.

In view of the fact that the sera of 9 patients with a syphilitic history gave a negative Wassermann Reaction -- it was decided to investigate the point as to whether some neutralising substance was present in the blood of patients suffering from malignant disease -- cancer serum was mixed with definitely syphilitic serum in equal quantities, tested separately the same day, in no case was the intensity of the reaction reduced in the syphilitic case. This would seem to prove that cancer serum has no neutralising action (see appendix c).

It is proposed to continue the work with the object of throwing light on some of the problems mentioned.

SUMMARY OF CONCLUSIONS.

A. There is not sufficient evidence to show that a series of cases of malignant disease show an abnormally high percentage of positive Wassermann reactions.

B. The Results obtained from these investigations do not tend to prove that there is any association between any particular form or situation of the malignant growth and the presence of a positive Wassermann reaction.

C. In few cases of cancer is a strongly positive result obtained.

D. Some cases of cancer with a syphilitic history give a negative Wasserman reaction.

E. The greater number of cases of cancer give a negative Wassermann reaction.

APPENDIX A.

No.	Name.	Age.	Stay weeks	Diagnosis	Wassermann.	Histology, Remarks.
1.	Denton John.	57.	4.	Epith. Lip	0.1 (-)	Squamous Celled Carcinoma Much inflam.round new growth.
2.	Hopwood John	82	2	Epith. Lip	0.1 (++)	Squamous Celled Carcinoma with massive keratinisation.
3.	Irvine Thomas.	51	35	Carcinoma Pharynx	Before intrav. Inj. of Neo.Salvarsan was twice 0.1(-) 0.2(-) 3 days after Inj. 0.1(-)0.2(-) 10 days after Inj. 0.1(-)0.2(-)	
4.	Ruler Joseph	52	9	Carcinoma Oesopagus.	0.1(-) 0.2(-)	No Histology. Home.
5.	Battersby Samuel	41	1	Carcinoma & Sarcoma Oesophagus.	0.1(-) 0.2(-)	Ulcerated Squamous celled Carcinoma with much inflam Stroma is composed of spindle celled sarcoma tissue. Thyroid, lungs, lumph glands show infiltrating spindle celled sarcoma.
6.	Shryhand Patrick	40		Carcinoma Oesophague	0.1(-)0.2(-)	No Histology, History of Syphilis.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
7.	Roberts Frank	55	30.	Carcinoma Pharynx.	Negative.	Squamous celled carcinoma.
8.	Bryan John	59	12	Carcinoma Pharynx posterior wall & base of tongue.	0.1(-)0.2(-)	Pharynx shows squamous celled carcinoma with Mucoid changes in the stroma. Lungs show active Tuberculosis. P.M.old Tuberculosis right and Pleura and lung.
9.	Tucker Jenry	61	11 months	Malignant growths Superior Maxilla and palate.	0.1(-)0.2(-)	No post mortem.
10	Meredith Littie	50	7	Carcinoma Superior Maxilla.	0.1(-)	Carcinoma face and nose Cervical glands show ordinary squamous celled carcinoma.
11.	Morris Charles	35	26	Squamous celled Carcinoma Superior Maxilla	0.1(-) 0.2(-)	Squamous celled Carcinoma Superior Maxilla. Tuberculous Broncho-pneumonia with Tubercle bacilli in l lungs, Haemolymph glands. Thyroid shows colloid goitre.
12.	Johnson Herbert	53		Epithelioma soft palate.	0.1(-)0.2(-)	
13.	May James	68	4	Carcinoma lower jaw and floor of mouth.	0.1(-)0.2(-)	Home.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
14.	Tomlinson Joseph	52	19	Carcinoma Alvedlar Margin extending in tongue.	(0.1(-)0.2(-)	Not completed.
15.	Blackhurst Peter	48	27	Epithelioma Alveolar Margin extending in tongue.	0.1(-)0.2(-) 7.3.14. 0.1(-)0.2(-) 21.3.14 0.1(-)0.2(±) 16.5.14.	History of Syphilis. Had Salvorsan. Squamous celled Carconoma Tongue.
16.	Varley Thomas	55	20	Carcinoma Floor of mouth invading tongue.	0.1(-)0.2(-)	Squamous celled Carcinoma, some of glands invaded by growth. Some show Tuberculosis. Liver very fatty and shows typical haepatic called Adenoma. Spleen shows one or two tubercles
17.	Barton Charles	61	11	Epithelioma of lewer jaw, inside of mouth.	0.1(-)0.2(-) 30.9.13 0.1(-)0.2(-) 29.11.13	Squamous celled carconoma, no keratinisation. Liver shows slight cirrhosis.
18.	Fielding	33	5	Sarcoma Tonsil and cervical glands.	o.1(-)0.2(-)	Lymphosarcoma.
19.	Brambels James	22	2	Sarcoma Tonsil	0.1(-)0.2(-)	Home after operation.

No.	Name	Age	Stay weeks.	Diagnosis	Wassermann.	Histology, Remarks.
20.	Hatch William	56	15	Carcinoma Tonsil	0.1(±)0.2(±)	Carcinoma of unusual type, the cells small and mostly spheroidal in type but in places are distinctly columnar. Considerable necrosis Some of the glands & the Liver show similar characteristics. Calcified glands. N. tubercle bacilli.
21.	Eason Robert	55	½	Sarcoma Tonsil	0.1(-)	Section shows Lymphosarcoma History of syphilis 30 years ago.
22.	Woolfenden	67	3	Carcinoma Tonsil	0.1(-)	No Post Mortem
23.	Slater	57	8	Carcinoma of floor of mouth.	0.1(++++) 0.2(++++)	History of syphilis. Home. No Histology.
24.	Deakin Wm.	62	12	Carcinoma Mouth	0.1(-)0.2(-)	Still in Hospital.
25.	Blackburn	60	4	Carcinoma Mouth	0.1(-)0.2(-)	Home.
26.	Howe.	43	4	Carcinoma Mouth Cervical Glands.	0.1(+)0.2(++)	Home
27.	Aikman	69	16	Carcinoma Mouth	0.1(-)0.2(-)	No Post Mortem.
28.	Sherratt	44	5	Epitheloma Tongue.	0.1(-)0.2(-)	Probably syphilis.
29.	Ingham	59	8	Epithelioma Tongue.	0.1(-)0.2(-) 11.10.13. D.1(-)0.2(-) 29.11.13.	Home.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
30	Fisher James	60	½	Epithelioma Tongue and Floor of Mouth.	0.1(-)0.2(-)	
31	Wisèley Thomas	57	1	Epithelioma Tongue	0.1(-)0.2(-)	Home.
32	Brogden Robert	56	7	Epithelioma Tongue and Floor of mouth.	0.1(-)0.2(-)	No Post Mortem.
33	Rogers John.	63	4	Epithelioma Tongue.	0.1(+)0.2(+++) 16.4.13. 0.1(±)0.2(+) 19.4.13.	Squamous celled carcinoma tongue and glands.
34.	Flannigan John	67	14	Epithelioma Tongue	0,1(-)	Ordinary Squamous celled Carcinoma of Tongue. Liver shows columnar celled Carcinoma which has originated in Mucous Membrane of Gall Bladder. Tubercle of adrenal. No tubercle in the section.
35.	Gee John	66	-	Epithelioma Tongue	0.1(-)0.2(-)	Glands enlarged.
36.	Balsiger John	81	3	Epithelioma Tongue	0.1(-)0.2(-)	No Port Mortem.
37.	Inglesby James	65	16	Epithelioma Tongue	0.1(-)0.2(-) 0.1(-)0.2(-) 24 hours after 1st.injection 0.1(-)0.2(-) 48 hrs.after 1st.Inj. 0.1(-)0.2(-) 24 hrs.after 2nd Inj.0.1(-) 0.2(-)48 hrs. after 2nd.Inj.	Squamous celled Carcinoma with much inflam. of surrounding tissue.

No.	Name	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology - Remarks.
38.	E Leigh Alexander	51	½	Epithelioma Tongue	0.1(-)0.2(-)	Home.
39	Davies	69	1½	Epithelioma Tongue	0.1(-)0.2(-)	Home.
40	Milcrest Wm.	70	7	Carcinoma of Pharynx starting in Tonsil, spreading through tongue to right side.	0.1(-)0.2(-)	Squamous celled Carcinoma. Lungs show old fibroid Tuberculosis. Spleen shows great fibrous thickening of the capsule.
41	Gallocher Fanny	51	4	Epithelioma Tongue recurrent.	0.1(-)0.2(-)	Squamos celled carcinoma with much inflammation, growths in Liver are very fibrous and the cells resemble spheroidal cells. Lungs show nodules of squamous celled carcinoma.
42	Simpkin	52	42	Epithelioma Tongue	0.1(-)0.2(-) 29.3.13 0.1(++)0.2(+++) 5.4.13 0.1(-)0.2(++) 3.5.13 0.1(++++)0.2(++++) 1.1.14	Squamous celled carcinoma invading the surrounding muscles. Some of cervical lymph glands show squamous celled carcinoma while others show Tuberculosis. Liver very fatty and contains a typical hepatic celled adenoma. Spleen shows one or two tubercles in the capsule. Lung shows purulent bronchitis, oedema and patches of Septic Pneumonia.

No.	Name.	666 Age.	Stay Weeks.	Diagnosis.	Wassermann.	Histology - Remarks.
43.	Swan James	44	1	Epithelioma Floor of Mouth and Tongue	0.1(-)0.2(-) Before Neo-salvarsan. 0.1(-)0.2(-)	Squamous celled carcinoma, one Lymphatic gland free, one slightly involved microscopically. History syphilis 25 years before.
44.	Clarke Bernard	49		Early Epithelioma Tongue.	0.1(-)0.2(-)	Squamous celled carcinoma.
45.	Ward C.R.	57	4	Carcinoma Tongue	0.1(-)0.2(-)	Squamous celled carcinoma. Cervical glands and Lungs show Tuberculosis with well marked giant cells and much caseation. One of the Cervical glands shows both tubercle and carcinoma
46.	Eckersley Mary	70	6	Carcinoma Breast	0.1(-)0.2(-)	Squamous celled carcinoma Liver shows cirrhosis and small cell infiltration.
47.	Fox,Mary Ann	35	2	Carcinoma Mammae Secondary sacrum	0.1(-)0.2(-)	Spheroidal celled carcinoma. Shows well marked cell inclusions. Secondaries in bones and glands.
48.	Arrondale Sarah J.	48	16	Carcinoma Mammae	0.1(-)0.2(-)	Spheroidal celled carcinoma penetrating pectorals. Liver extremely fatty.
49	Cash Mary	48	3	Sedondary Carcinoma Liver Primary Breast.	0.1(-)0.2(-)	Spheroidal celled carcinoma of liver, lungs, glands. Broncho-Pneumonia.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
50.	Crook Sarah	77	16	Carcinoma Mammae	0.1(-)0.2(-)	Spheroidal celled Carcinom of Breast, liver and lungs
51.	Fisher Harriet	49	52	Carcinoma Mammae recurrent in Femur	0.1(-)0.2(-)	Home.
52.	Davies Jane	69	6	Carcinoma Mammae	0.1(-)0.2(-)	Home.
53.	Jackson Eva	25	3	Carcinoma recurrent in Femur.	0.1(-)0.2(-)	Home.
54	Eyet Emily	69	5	Recurrent Carcinoma Mammae	0.1(-)0.2(-)	Columnar celled Carcinoma of Breast. In some place much fibrous tissue, in other places mucoid change causing growth to resemble "Colloid Cancer". Secondaries in skin, glands, heart, lungs and sternum.
55	Pass Ada	68	2	Carcinoma Mammae	0.1(-)0.2(-)	Home
56	McCann Mary	45	3	Recurrent Carcinoma Right Breast. Carcinoma of Left Breast.	0.1(-)0.2(-)	Spheroidal celled carcinoma. Growth present on pectorals, Glands, mesentery, intestine, stomach, omentu aorta, mediastinum, adventitia of aorta. Liver fatty kidney shows necrosis of Convol. Tubules.
57	Robins Jane	57	4	Carcinoma Mammae	0.1(-)0.2(-)	Spheroidal celled Carcinom of Breast, axilla, liver.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
58	Britton Eliz.	39	26	Recurrent Carcinoma Mammae	0.1(-) 0.2(+)3.5.13. 0.1(-) D.2(+)10.5.13.	Sections of Breast, sternum vertebrae. Extra dural tumours lymphatic glands and liver show a columnar celled carcinoma. In many places the cells have changed their character and form large polygonal cells many with several nuclei. The cells contain large numbers of "cancer bodies". Liver very fatty and kidneys show congestion Spinal cord shows ascending degeneration below the seat of compression.
59	Robert Jane.	70	15	Carcinoma Breast Paraplegia.	0.1(-) 0.2(+) 29.3.13 0.1(-) 0.2(+) 3.5.13	No secondaries visible Post Mortem.
60	Battersby Susannah.	44	18 months	Carcinoma Mammae. Recurrent Paraplegia.	0.1(-) 0.2(+)	Recurrence in Supraclavicular glands, skin, liver and bone.
61	Hyde Margaret.	38	11	Carcinoma Mammae Recurrent.	0.1(-)	Home.
62	Heywood Martha	68	3	Carcinoma Mammae	0.1(-)	Home.
63	Allen Mrs.	60	4	Carcinoma Mammae	0.1(-)0.2(-)	In hospital.
64	Connor John.	41	8	Carcinoma Stomach	0.1(-)0.2(-)	Home.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann	Histology. Remarks.
65.	Broder Joseph	38	7	Carcinoma Stomach.	0.1(-)0.2(-)	Peritoneum studded with minute nodules. Spheroidal celled Carcinoma. Stomach some tendency to mucoid degeneration.
66.	Wilcox Clara.	68	5	Carcinoma Pylorus.	0.1(-)0.2(-)	No Post Mortem.
67.	Coulson Mary Ann	67	5	Carcinoma Omentum.	0.1(-)0.2(-)	No Post Mortem.
68	Ives Emily	60	10	Carcinoma Uteri	0.1(-)0.2(-)	Home.
69	Jones Mary	67	48	Carcinoma Uteri, and Carcinoma Bladder.	0.1(-)0.2(-)	Confirmed Post Mortem involving Rectum, bladder vagina and inguigal gland
70	Smith Margetta	45	4	Carcinoma Uteri	0.1(-)0.2(-) 7.6.13 0.1(-)0.2(-) 14.6.13.	Home.
71.	Shofield Hannah	49	2	Carcinoma Uteri.	0.1(++++) 0.2(++++)	Home, no histology.
72.	Griffin Eliz,	48	2	Carcinoma Uteri. Recurrent.	0.1(-)0.2(-)	Home.
73.	Herriot Mary.	38	15	Carcinoma Uteri	0.1(-)	Squamous celled carcinoma cells very large, glands show numerous cysts lined with columnar celled Epithelium.
74.	Yates Annie	50	30	Carcinoma Uteri	0.1(++++) 0.2(++++)	Still in Hospital

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
75.	Ball Mary Jane	34	2	Carcinoma Uteri	Dec. 1913. 0.1(++)0.2(++) Dec. 1914. readmitted 0.1(-) 0.2(-)	Squamous celled carcinoma Uteri. History suggests Syphilis.
76	Webb Agnes	37	12	Carcinoma Uteri	0.1(-) 0.2(-)	History suggests Syphilis.
77	Briggs Alice	50	26	Carcinoma Uteri	0.1(++++) 0.2(++++)	No Histology. History suggests Syphilis.
78	Chorlton Mary	21	17	Carcinoma cervex Uteri.	0.1(-)	Squamous celled carcinoma with very active cell proliferation.
79	Oglesby Mrs.	52	25	Carcinoma Uteri	0.1(-)0.2(-)	In Hospital.
80	Richards Mrs.	43	21	Carcinoma Uteri	0.1(-)0.2(-)	Still in Hospital.
81	Lawley Irene	27	13	Carcinoma Uteri	June 1915 0.1(++++) 0.2(++++) Sept.1915. 0.1(-)0.2(-)	Still in Hospital. History suggests Syphilis.
82	Mawdsley Mrs.	54	4	Carcinoma Uteri	0.1(-)0.2(-)	In Hospital.
83	Wilson Mrs.	29	3½	Carcinoma Uteri	0.1(-)0.2(-)	No Post Mortem. Definite History of recent Syphilis
84	Williams Mrs.	68	4	Carcinoma Uteri Carcinoma Ovary.	0.1(-)0.2(-)	In Hospital.
85	Leaver Mrs.	44	8	Carcinoma Ovary	0.1(-)0.2(-)	In Hospital.

No.	Name.	Age.	Stay weeks.	Diagnosis	Wassermann.	Histology - Remarks.
86	Cooper Mrs.	47	3	Carcinoma Ovary.		Home.
87	Weaver Joseph	28	14	Carcinoma Recti	0.1(-)	Columnar celled carcinoma showing colloid (mucoid) degeneration in places. Kidney shows some fibrotic patches.
88	Humphrey W.R.	57	17	Carcinoma Rectum	0.1(-)0.2(-)	Columnar celled Carcinoma Liver shows modules of columnar celled carcinoma. The Kidney shows arteriosclerosis.
89	Hall William	46	9	Carcinoma Recti	0.1(-)	No Histology.
90	Hodge John	69	2	Carcinoma Recti	0.1(-)0.2(-)	Columnar celled carcinoma Kidneys show intestinal nephritis.
91	Bronson	67	21	Carcinoma Recti	0.1(-)	Columnar celled carcinoma.
92	Shuttleworth Sophia	53	6	Endothelioma Parotid,	0.1(-)0.2(-) 4.7.14 0.1(-)0.2(-) 25.1.14	Endothelial carcinoma parotid.
93	Nelson Elizabeth	73	6	Carcinoma Parotid	0.1(-)0.2(-)	Home, no Histology.
94	Hayes Elizabeth	60	9	Carcinoma Parotid	0.1(-)0.2(-)	Endothelioma.

No.	Name.	Age.	Stay weeks.	Diagnosis	Wassermann.	Histology - Remarks.
95	Cornthwaite John	70	8	Malignant glands neck.	0.1(-)0.2(-)	Lymphocytoma of Cervical glands, subcutaneous tissue mesentery, omentum, liver, kidney, lungs. All show same structure:- Round or polygonal cells some of which have delicate processes. Between the cells in many places is a branching reticulum. Conspicuous feature is the presence of numerous multinucleated giant cells with deeply staining nuclei.
96	Johnson Thomas	7o	8	Malignant glands neck,	0.1(-)0.2(-)	Patient went insane.
97	Benson Harry	56	2	Malignant glands neck.	0.1(-)0.2(-)	Primary growth undiscovered squamous celled carcinoma with slight keratinisation
98	Baron William	46	2	Malignant glands neck	0.1(-)0.2(-)	Home, no Histology.
99	Glynn	50	4	Malignant glands neck	0.1(+)0.2(++) 8.11.13 0.1(-)0.2(±) 29.11.13	Home, no Histology.
100	Pleasance Martha	61	10	Malignant glands groin.	0.1(-)0.2(-)	Home.
101	Edwards Walter	41	2 days.	Lympho-sarcoma cervical glands.	0.1(-)0.2(-)	No Post Mortem.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
102	Cole Ernest	45	8	Carcinoma Cervical Glands.	0.1(++++)	No Post Mortem.
103	Marlor Charles	54	14	Carcinoma Scrotum Malignant glands groin.	0.1(-)0.2(+++) 2.5.14. 0.1(-)0.2(-) 16.5.14 Blood taken with syringe this time	Confirmed Post Mortem.
104	Bradley Josepj	55	7	Carcinoma Scrotum.	0.1(-)0.2(-)	Home after operation. Squamous celled carcinoma with much surrounding inflammation.
105	Nobel Wm,	77	21	Carcinoma Prostate.	0.1(-)0.2(-) 0.1(-)0.2(-)	No Histology.
106	McKeown	52	26	Carcinoma Penis glands in groin	June 1914.0.1(++++) 0.2(++++) Aug Sept.1915. 0.1(++++) 0.2(++++)	Still alive, under observation 18 months.
107	Edgington Dinah	76	22	Carcinoma Vulvae recurrent.	0.1(-)0.2(-)	Sebaceous celled carcinoma of Vulva.
108	Clithero	66	2	Epithelioma bladder.	0.1(-)0.2(-)	In Hospital.
109	Jackson Peter	57	13	Rodent ulcer face.	0.1(-))	No Histology.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
110.	Wilcox John.	26	39	Rodent ulcer face.	0.1(-)	Had Syphilis, Roden Ulcer. Some of Cervical Lymph glands show characters of haemolymph glands, others are normal. Kidney show congestion and cloudy swelling. Some small celled infiltration of portal canals of liver probably septic in origin.
111	Parker Peter	66	10	Rodent Ulcer face.	0.1(±)0.2 (+)	No Histology.
112	Dawson Henry.	65	21	Rodent Ulcer Face.	0.1(-)	Rodent Ulcer with tendency to formation of Epithelial pearls. Sections of retained testis show atrophy of secreting epithelium.
113	Whatmough Martha	53	4	Rodent Ulcer Face.	0.1(-)0.2(-)	Home. No Histology.
114	Clyne Barratt	39	10	Epithelioma Thigh	0.1(-)0.2(-) June 1915.	In Hospital.
115	Hollingworth	79	8	Rodent Ulcer Face	0.1(-)0.2(-) August 1915. 0.1(-)0.2(-)	No Post Mortem.
116	Winwood James	52	7	Carcinoma Neck	0.1(-)0.2(-)	Squamous celled carcinoma.
117	Snelson William	59	26	Rodent Ulcer Face.	0.1(-)0.2(-) 10.5.13. 0.1(-)27.9.13	No Post Mortem.
118	Smith George	53	18	Rodent Ulcer Face.	0.1(-)0.2(-)	No Post Mortem.
119	Taylor Laurence	49	16	Carcinoma Glands Neck	0.1(-)0.2(-)	Squamous celled carcinoma with small alveoli & kratinisation. Lymphatic glands free from new growth.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
120	Rigby Mary Ann	63	12	Carcinoma Skin Eyelid.	0.1(-)0.2(-)	Squamous celled carcinoma. No Keratinisation. Cystic Ovary, with some intracystic papillomata.
121	Lewis Rachael	34	3	Rodent Ulcer Face. Upper Lip.	0.1(-)0.2(-)	"Cylindroma" of the Upper Lip Tumour is composed of small cells resembling those of a Rodent Ulcer, but arranged in Trabeculae. These Cellular Trabeculae are separated from one another by Trabeculae of Mucoid tissue arising from degeneration of the stroma.
122	Smith Thomas	54	18	Carcinoma Cheek.	0.1(-)0.2(-)	Endothelial Carcinoma, showing numerous nitotic figures.
123	Thompson William	46	16	Epithelioma Ear.	0.1(-)	Squamous celled Carcinoma invading salivary glands.
124	Winterbottom Bertha	53	9	Carcinoma abdominal wall.	0.1(-)0.2(-)	Endothelioma of abdominal wall.
125	Kennedy James	53	4	Carcinoma amputation stump lower limb, glands, groin.	0.1(-)0.2(-)	
126	Griffiths John	40	9	Melanotic Carcinoma Chest Wall, Abdominal Wall.	0.1(++++)	Melanotic carcinoma in skin Adrenal Lymph glands diaphragm, peritoneum, muscles, liver, heart, omentum.

No.	Name.	Age.	Stay weeks.	Diagnosis.	Wassermann.	Histology, Remarks.
127.	Rowbottom Mary.	35		? Papilloma ? Epithelioma Foot.	0.1(++) 0.2(-)	Section shows Papilloma with suspicion of malignancy Clinically Epithelioma.
128	Withnell Sarah	43	3½	Primary Carcinoma Thyroid, Secondary Carcinoma Chest.	0.1(++) 0.2(+) Doubful.	Home.
129	Wharton Martha	27	36	Sarcoma Femur	0.1(-)0.2(-)	No Histology.
130	Haggars Frederich	-	-	Mediastinal Tumour	0.1(-)0.2(-)	No Histology.

APPENDIX B.

LUETIN REACTION.

		Reaction.
Fletcher.	Carcinoma Tonsil	Slight redness.
Blackhurst	Epithelioma Mouth.	Negative.
Marlor.	Epithelioma Ext. Genitals.	Slight redness.
Broder	Carcinoma Stomach	Negative
Simpkin	Epithelioma Tongue	Negative
Bryan	Carcinoma Pharynx	Negative
Hatch	Carcinoma Pharynx	Negative
Mc.Vietie	Carcinoma Uteri	Slight redness.
Jones	Carcinoma Uteri	Negative
Thomson	Carcinoma Recti	Negative
Battersby	Carcinoma Breast	Negative
Milcrest	Carcinoma Pharynx	Negative
Lawley	Carcinoma Uteri	Negative
Thornton	Carcinoma Larynx	Negative
Mc.Keown	Carcinoma Penis	Negative
Deakin	Carcinoma Mouth	Slight redness.
Clyne	Epithelioma Skin	Negative
Clithero	Epithelioma Bladder	Negative
Aikman	Carcinoma Mouth	Slight redness.
Yates	Carcinoma Uteri	Negative
Williams.	Carcinoma Uteri and Recti.	Negative

APPENDIX B.

LUETIN REACTION (Continued)

Mawdsley	Carcinoma Uteri	Slight redness.
Cooper	Carcinoma Omentum	Negative
Allen	Carcinoma Mammaee	Negative

The slight erythema noticed must not be confused with the positive Luetin reaction in which a vivid blush is present,and persists for several days, often associated with papule or pustule.

APPENDIX C.

Rigby. Carcinoma Jaw.
Wassermann Reaction. 0˙1 (-) 0˙2(-)

Kennedy. Syphilitic Case.
Wassermann Reaction. 0˙1 (+++)

Mixture. 0˙1c.c. Rigby.
0.1c.c. Kennedy.
Wasserman Reaction (++++)

Wiseley. Epithelioma Tongue.
Wassermann Reaction 0˙1 (-)0˙2 (-)

Brailsford Syphilitic case.
Wassermann Reaction. 0˙1(++++) 0˙2 (++++)

Tube 1.0.05 c.c. of each Reaction (++++)

Tube 2.0.1c.c. of each Reaction (++++)

Tube 3.0.2c.c. of each Reaction (++++)

Martin Syphilitic case.
Wassermann Reaction 0.1 (+++) 0.2 (++++)

Normal Serum.
Wassermann Reaction. 0.1 (-) 0.2 (-)

Balsiger Carcinoma.
Wassermann Reaction. 0.1 (-) 0.2 (-)

Tube 1. 0.05 Martin + 0.05 Balsiger (++)

Tube 2. 0. 1 Martin + 0.1 Balsiger (+++)

Tube 3. 0.05 Normal + 0. 05 Martin (+½

Tube 4. 0.1 Normal + 0. 1 Martin (++)

Tube 5. 0.05 Normal + 0.05 Balsiger (-)

Tube 6. 0.1 Normal + 0.1 Balsiger (-)

Cliteo. Epithelima Bladder.
Wasserman Reaction. 0.1 (-) 0.2 (-)

Gratrix. Syphilitic case.
Wassermann Reaction 0.1 (++++) 0.2 (++++)

Mixture. Clitheo 0.1c.c.
Gratrix 0.1c.c.
Wassermann Reaction (++++)

APPENDIX D.

During the last twelve years there are Post Mortem Records of nearly 300 cases of Cancer at the Christie (Cancer) Hospital. Not a single active gumma is recorded in the whole series. No active sign of Syphilis is present which might not be due to some other condition. Of these, 61 have been cases of malignant growth of the mouth of which 32 were cases of epithelioma of the tongue. Here also there was no sign which could be conclusively recorded as an active syphilitic manifestation .